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Attempts to Identify the Viral Agent(s) Responsible for Sheep-Lung Adenomatosis and to Transfer this Neoplastic Disease to Rodents.

In recent years it has been shown that spontaneous and induced tumors in rodents contain partially or fully expressed RNA tumor viruses. The reason for this peculiar phenomenon is that the RNA oncogenic virus genome is genetically transmitted to somatic cells in which it remains in a repressed form until environmental factors or oncogenic agents remove the specific inhibitor(s).

Previous work in this laboratory has demonstrated the activation of type-C particles by chemical carcinogens in the lymphoreticular tissues of a low tumor mouse strain. Recently, it has also been observed that hydrazine sulphate and urethane-induced lung tumors in BALB/c mice contain type-C particles and their group-specific antigens; but the particles have not been detected in normal lung tissue of the same mice or in normal lung tissue of untreated mice of the same age. Type-C particles have also been isolated from three tissue culture lines of urethane-induced lung tumors of BALB/c mice.

It may be possible to transfer all the information acquired in the mouse lung tumor system study to the sheep-lung adenomatosis problems. This disease, in fact, shows certain analogies to mouse-lung tumors. Both tumors are derived from type B alveolar cells, both are of low malignancy, as is demonstrated by the slow growth and rare metastatization, and both contain type-C particles. Furthermore, sheep-lung adenomatosis is transmissible by cell-free filtrate of neoplastic lung tissue not only to lambs but also to hoggets and ewes, and a herpes-like virus has been isolated from the adenomatosis affected lungs.

The specific aims of this research project are: (1) to isolate the type-C particles from sheep-lung adenomatosis and to characterize these particles, their group-specific antigens and their biological activity; (2) to isolate the herpes-virus-like particles and their biological properties and, possibly, (3) to transfer the disease to rodents (mice, rats and hamsters).

As about 10% of all human lung tumors are morphologically and biologically similar to those of mice and sheep, this experimental model could have application to humans.

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